

EXHIBIT A

MSDS Number: M0088 ***** Effective Date: 11/02/01 ***** Supercedes: 11/17/99

MSDS**Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08855



**Mallinckrodt
CHEMICALS**

24 Hour Emergency Telephone: 800-456-2151
CHEMTREC: 1-800-426-9000

National Response in Canada
CAINTEC: 1-800-456-4568

Outside U.S. and Canada
Chemtel: 763-577-3887

NOTE: CHEMTREC, CAINTEC and National Response Centers are telephone numbers to be used only in the event of a chemical emergency involving a spill, leak, fire, explosion or other event involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

MAGNESIUM METAL, POWDER**1. Product Identification**

Synonyms: Magnesium powder

CAS No.: 7439-95-4

Molecular Weight: 24.30

Chemical Formula: Mg

Product Codes: Product Codes: 5894

2. Composition/Information on Ingredients

| Ingredient | CAS No | Percent | Hazardous |
|-----------------|-----------|-----------|-----------|
| Magnesium Metal | 7439-95-4 | 99 - 100% | Yes |

3. Hazards Identification**Emergency Overview**

WARNING! FLAMMABLE SOLID. DANGEROUS WHEN WET. HIGHLY REACTIVE. MAY IGNITE SPONTANEOUSLY ON CONTACT WITH WATER OR DAMP MATERIALS MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

Potential Health Effects**Inhalation:**

Inhalation of dusts or fumes may irritate the respiratory tract and may cause metal fume fever. Symptoms may include coughing, chest pain, fever, and leukocytosis.

Ingestion:

Magnesium metal does not have well-characterized toxicity. May cause abdominal pain and diarrhea.

Skin Contact:

Particles embedded in the skin may cause eruptions. Molten magnesium may cause serious skin burns.

Eye Contact:

High concentrations of dust may cause mechanical irritation. Watching a magnesium fire can cause eye injury.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

Existing wounds contaminated with magnesium are very slow to heal.

4. First Aid Measures

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

5. Fire Fighting Measures

Fire:

Autoignition temperature: 473C (883F)

When heated in air to a temperature near its melting point, magnesium may ignite and burn. Dangerous in the form of dust or flakes, and when exposed to flame or by violent chemical reaction with oxidizing agents. Magnesium may react with moisture or acids to evolve hydrogen gas, which is a highly dangerous fire or explosion hazard.

Autoignition temperature is for Magnesium turnings or ribbon.

Explosion:

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum explosible concentration 0.030 grams/liter. Water used on molten magnesium will produce hydrogen gas and may cause an explosion.

Fire Extinguishing Media:

Use metal extinguishing powders such as G-I® graphite powder, Met-L-X® powder, powdered talc, dry graphite, powdered sodium chloride, soda ash, or dry sand. Warning! Do not use foam, chlorinated products such as Halon®, carbon dioxide, or water to extinguish magnesium fires, because dangerous reactions will occur. Use of water on molten magnesium will produce hydrogen gas and may cause an explosion.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Fire fighters should protect their eyes and skin from flying particles. In order to prevent eye injury, do not look directly at magnesium fires.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate the area of the spill or leak. Wear appropriate personal protective equipment as specified in Section 8. Collect the spilled material and transfer to a clean, dry metal covered container for recovery or disposal. Do not use water in the collection process. If the spilled magnesium has come into contact with water, proceed with caution. Hydrogen gas may be generated, which may cause a fire or explosion. Evacuate the area, put on fire fighting protective equipment and proceed as with a metal fire.

7. Handling and Storage

Keep in tightly closed container. Store in a cool, dry, ventilated area. Protect against physical damage. Store

finely divided powder, chips or shavings in detached fire-resistant building, protected from moisture and away from oxidizers, chlorine, bromine, iodine, acids, and all possible sources of ignition. Heavier sections may be stored in the open. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Silver solid.

Odor:

Odorless.

Solubility:

Insoluble in water.

Specific Gravity:

1.74 @ 20C (68F) (solid)

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

1100C (2012F)

Melting Point:

649C (1200F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

1.0 @ 621C (1150F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Slowly oxidizes in moist air.

Hazardous Decomposition Products:

Toxic gases and vapors may be released if involved in a fire.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Magnesium reacts dangerously with many substances, including oxidizers, carbonates, cyanides, chlorinated hydrocarbons, sulfates, acids, and other metals. Please refer to the NFPA publication "Fire Protection Guide on Hazardous Materials" most recent edition for details. Reacts with acids to form hydrogen gas.

Conditions to Avoid:

Moisture, heat, flames, ignition sources and incompatibles.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

| Ingredient | ---NTP Carcinogen--- | | IARC Category |
|-----------------------------|----------------------|-------------|---------------|
| | Known | Anticipated | |
| Magnesium Metal (7439-95-4) | No | No | None |

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: MAGNESIUM, POWDER

Hazard Class: 4.3, 4.2

UN/NA: UN1418

Packing Group: II

Information reported for product/size: 500G

International (Water, I.M.O.)

Proper Shipping Name: MAGNESIUM POWDER

Hazard Class: 4.3, 4.2

UN/NA: UN1418

Packing Group: II

Information reported for product/size: 500G

15. Regulatory Information

| -----\Chemical Inventory Status - Part 1\----- | | | | |
|--|------|-----|-------|-----------|
| Ingredient | TSCA | EC | Japan | Australia |
| Magnesium Metal (7439-95-4) | Yes | Yes | No | Yes |

| -----\Chemical Inventory Status - Part 2\----- | | | | |
|--|-------|-------------------|------|-------|
| Ingredient | Korea | --Canada-- DSL | NDSL | Phil. |
| Magnesium Metal (7439-95-4) | Yes | Yes | No | Yes |

| -----\Federal, State & International Regulations - Part 1\----- | | | | |
|---|------------------|-----|--------------------|----------------|
| Ingredient | -SARA 302- FQ | TPQ | -SARA 313- List | Chemical Catg. |
| Magnesium Metal (7439-95-4) | No | No | No | No |

| -----\Federal, State & International Regulations - Part 2\----- | | | | |
|---|--------|------------------|----------------|--|
| Ingredient | CERCLA | -RCRA- 261.33 | -TSCA- 8(d) | |
| Magnesium Metal (7439-95-4) | No | No | No | |

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No
 Reactivity: Yes (Pure / Solid)

Australian Hazchem Code: 4[Y]

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 1 Reactivity: 2

Label Hazard Warning:

WARNING! FLAMMABLE SOLID. DANGEROUS WHEN WET. HIGHLY REACTIVE. MAY IGNITE SPONTANEOUSLY ON CONTACT WITH WATER OR DAMP MATERIALS MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

Label Precautions:

Keep away from heat, sparks and flame.
 Do not allow contact with water, acids, or moisture.
 Avoid contact with eyes, skin and clothing.
 Avoid breathing dust.
 Keep container closed.
 Use with adequate ventilation.
 Wash thoroughly after handling.

Label First Aid:

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)